

PaperCut Payment Gateway Module

Nelnet Business Solutions – Commerce Manager

Quick Start Guide

This guide is designed to supplement the *Payment Gateway Module* documentation and provides a guide to installing, setting up, and testing the Payment Gateway Module for use with Nelnet's Commerce Manager. The main Payment Gateway Module documentation may be downloaded from:

<http://www.papercut.com/anonftp/pub/pcng/ext/payment-gateway/PaymentGatewayModule.pdf>

IMPORTANT: *You should have an active Commerce Manager deployment with Nelnet Business Solutions before installing the payment gateway module.*

Setup and testing time should take around 30 minutes for basic setup, plus time for customizing the order pages if required. No system level restart is required; however the PaperCut application server will be restarted during the install process. If other administrators are using the PaperCut administration interface at this time, it may be advisable to warn them of the pending restart.

This document is written assuming the reader has good server administration skills and is experienced with general PaperCut administration.

Contents

1 Payment Process Workflow	2
2 Commerce Manager Configuration	2
3 Installing the Payment Gateway Module	5
4 Testing	7
5 Security	8
6 Go-Live	8
7 Troubleshooting	9

1 Payment Process Workflow

Below is the sequence of events that occurs when a user adds credit to their account using the Nelnet payment gateway:

1. User clicks on the Add Credit link and goes to the **Add Credit** page.
2. User chooses the amount they would like to add and clicks on **Add Value**.
3. The user is redirected to the Nelnet hosted payment page to enter their payment details. This URL is configurable as it is site-specific.
4. After the user has filled out all the fields and has confirmed payment, she will then be redirected back to the PaperCut user interface. To allow Nelnet to know where to send the user, the **Redirect URL** must be configured.
5. PaperCut will verify the authenticity of the redirection from Nelnet (using hashing and a shared secret **Key**), and then display the original **Add Credit** page with a message at the top indicating either success or failure for the transaction.

2 Commerce Manager Configuration

The payment gateway uses the Commerce Manager option of *Private Transaction Processing* which provides extra security. There are a number of configuration parameters that must be set up with Nelnet via their Commerce Manager Administrator to support this. Some of these parameters are shared with the payment gateway using its configuration file.

It is recommended to set up PaperCut in a Nelnet testing environment first ("UAT"), then import the configuration into the production environment once it is confirmed working. To configure Nelnet for PaperCut integration:

1. Log into the Nelnet Commerce Manager Administrator, testing/UAT site.
2. Via **Configuration -> Payment Orders**, create a new **Order Type** for PaperCut transactions. The order type is a unique name to distinguish between different order sources and uniquely identify transactions originating from PaperCut.

3. Navigate to the **Edit Order** page for the new order type.

Edit Order

Order Information			
User:	Commerce Manager Payer		
Type:	PaperCutsandbox		
Description:	Sandbox test site for PaperCut		
<input checked="" type="checkbox"/> Email payment receipt <input checked="" type="checkbox"/> Make web payer url private (require hash)			
<input checked="" type="radio"/> use default key <input type="radio"/> use new key <div style="border: 1px solid gray; padding: 2px; display: inline-block;">key</div> <input type="button" value="highlight"/>			
Hash Algorithm: <input type="text" value="use default (MD5)"/>			

Order Inventory Rules ?	
<input type="radio"/> Allow <input checked="" type="radio"/> Disallow	

Order Details			
Field Name	Display Options	Field Type	Values
Order Number:	<input type="checkbox"/> Visible	<input checked="" type="radio"/> Text	
Order Name:	<input type="checkbox"/> Visible	<input checked="" type="radio"/> Text	
Order Type:	<input type="checkbox"/> Visible	<input checked="" type="radio"/> Text	PaperCutsandbox
Order Description:	<input checked="" type="checkbox"/> Visible <input type="checkbox"/> Editable <input type="checkbox"/> Required	<input checked="" type="radio"/> Text <input type="radio"/> Dropdown	Sandbox test site for PaperC
Order Subtype:	<input type="checkbox"/> Visible	<input checked="" type="radio"/> Text	
Order Due Date:	<input type="checkbox"/> Visible	<input type="radio"/> Text	System Derived
Order Amount Due:	<input type="checkbox"/> Visible	<input type="radio"/> Text	System Derived
Order Balance:	<input type="checkbox"/> Visible	<input type="radio"/> Text	System Derived
Order Current Status Amount Due:	<input type="checkbox"/> Visible	<input type="radio"/> Text	System Derived
Order Current Status Balance:	<input type="checkbox"/> Visible	<input type="radio"/> Text	System Derived
Order Fee:	<input type="checkbox"/> Visible	<input checked="" type="radio"/> Text	
Order Amount:	<input type="checkbox"/> Editable	<input checked="" type="radio"/> Text <input type="radio"/> Dropdown	

Figure 1 - Screenshot of the Commerce Manager Interface

4. Enable the option “Make web payer URL private (require hash)”.
5. Select “use new key” and enter a secure password (letters, numbers, characters). This will be shared between Nelnet and PaperCut and used to verify the authenticity of the transaction. Any “unguessable” random text of at least 8 characters is suitable.
6. Find the section **Transaction Redirect URL** and select **Allow**.
7. You will need to know the **Nelnet Commerce Manager URL**. For the testing/UAT environment this is generally of the form:

https://uatquikpayasp.com/yourinstitution/commerce_manager/payer.do

Where “yourinstitution” is typically an abbreviated name of your institution and will be consistent with your NBS system deployment name.

When you move from UAT into production, the “uat” prefix is removed from the URL

and becomes:

`https://quikpayasp.com/yourinstitution/commerce_manager/payer.do`

8. Find the option **Order Details -> Order Amount** and ensure the **Editable** option is **disabled** and the **Field Type** is set to **Text**.
9. Via the **Configuration -> Allowed Redirects** menu on the left-hand side, you need to add a return URL. This table defines the list of URLs that Commerce Manager is allowed to redirect users to after a transaction is completed. You will need to add the URL that returns users to PaperCut, which we call the **Commerce Manager Redirect URL**. Add in the URL in the top box on the page of the form:

`http://papercut.myorg.edu:9191/rpc/gateway/nelnet`

where `papercut.myorg.edu` is the hostname of your PaperCut server. This hostname does not need to be external or resolvable from the internet (i.e. only the user needs to be able to resolve this URL, and not necessarily Nelnet). Then click the **Add** button and it should be added to the list below (see Figure 2 - Screenshot of the Allowed Redirect URLs).

The screenshot shows the 'Nelnet Connected' interface. On the left is a navigation menu with options like 'Message Board', 'Change Password', 'Payment Report', 'User Report', 'Reconcile Report', 'Find Transaction', 'Content & Style', 'Configuration', 'Users', 'Roles', 'Processors', 'Payment Orders', 'Maintenance Pages', and 'Allowed Redirects'. The main area is titled 'Add Redirect Url' and contains a text input field and an 'Add' button. Below this is a table titled 'Allowed Redirect Urls' with two columns: 'Actions' and 'Url'. The table contains several rows of URLs, with the URL 'http://nelnet.papercutssoftware.com:9191/rpc/gateway/nelnet' circled in red.

Actions	Url
	http://www.cnn.com
	http://www.dea.com/2sD0p8LG55/Confirmation.aspx
	https://dynamicforms.ngwebsolutions.com/PaymentResults.aspx
	https://cmetracker.net/UVACME/doccauth
	https://apply-test.med.virginia.edu/amp/applicant/application/fee/Liste
	http://localhost:7080/StrutsExample1/studentPaymentControler.do
	http://iasc-culture.org/IASC_order_confirmation_test.php
	https://capella.vpas.vt.edu/payments/p_mkpayment2.asp
	http://nelnet.papercutssoftware.com:9191/rpc/gateway/nelnet
	https://localhost/ArsWebsite2010/QuikPAYReturn.aspx

Figure 2 - Screenshot of the Allowed Redirect URLs

3 Installing the Payment Gateway Module

1. The Payment Gateway Module will function during the PaperCut NG 40 day trial period. After this, the module must be licensed. If you have been supplied with a new license take the time to install this now. The license install procedure is documented in the PaperCut user manual chapter 'Licensing and Support'.

2. Download the Payment Gateway Module from the PaperCut website at

<http://www.papercut.com/anonftp/pub/pcng/ext/payment-gateway/pcng-payment-gateway-module.exe>

3. Install the module into the same directory as PaperCut. This is normally:

`C:\Program Files\PaperCut NG\`

4. Open the file:

`[app-path]\server\lib-ext\ext-payment-gateway-nelnet.properties`

in a text editor such as Notepad.

5. Locate the line `nelnet.enabled=N` and change the `N` to `Y`. This will enable the Nelnet module.
6. Locate the line `nelnet.order-type` and enter your Commerce Manager **Order Type**.
7. Locate the line `nelnet.secret-key` and enter your Commerce Manager **Key**.
8. Locate the `nelnet.hosted-payment-page-url` and enter your **Nelnet Commerce Manager URL** mentioned in stage 2 above. When you are initially doing testing this will be the UAT version and then afterwards you will change it to the production version.
9. Locate the `nelnet.redirect-page-url` and enter your Commerce Manager **Redirect URL**.
10. Configure other options in this file as discussed in General Configuration Options in the Payment Gateway Module documentation, or by referring to the comments in the file itself. Options include limits on the amount to transfer, access groups, number of retries allowed before failing, and header and footer html.

You may like to enable a group restriction to limit access to administrators until configuration is complete.

11. Save the file and exit the text editor.
12. Restart the *PaperCut Application Server* service via `Control Panel -> Administrative Tools -> Services` and wait 30 seconds.
13. Check the end of the log file at `[app-path]\server\logs\server.log` for any obvious error messages.

4 Testing

The payment gateway module is now ready for testing. This test will involve performing a transaction with a test credit card number for a test order type and testing end-to-end functionality.

1. Ensure your payment gateway configuration is using the **UAT** version of the **Nelnet Commerce Manager URL**.
2. Log into the PaperCut user web interface at **http://papercut:9191/user**
3. A new link called **Add Credit** should be present on the left. Click this link.
4. Select an amount to add and click **Add Value**.

Add credit using Nelnet

Username	tim
Current Balance	\$63.40
Amount to add	<input type="text" value="\$5.00"/>
<input type="button" value="Add Value"/>	

5. You should now be redirected to Nelnet's Commerce Manager Payer for payment. Enter the payment details including a test visa card number of **4111111111111111** or test master card number of **5454545454545454** and associated details as requested (e.g. fictional cardholder name, address, email). Note that the expiration date must be in the future, and the zip code must be 5 digits.
6. After confirming the credit card information is correct and clicking on the **Confirm** button, you will see the Processing web page before it returns you to PaperCut.
7. You should now be back at the **Add Credit** page. You should see a green message indicating that the funds were added to your account, and **Current Balance** should show your new account balance. The **Transaction History** page should contain the payment transaction.

5 Security

The payment gateway system uses two URLs, one for redirection to Nelnet's Commerce Manager payment page and another URL to redirect one back to the PaperCut payment gateway page. In order to maintain security and prevent the user from forging the payment URLs, the URLs are appended with an MD5 Hash value calculated using the parameters and a shared secret key. The shared secret key is akin to a password which is shared between Nelnet's Commerce Manager system and the PaperCut payment gateway system. As part of verification, this hash is recalculated on the parameters with the secret key and compared to the hash value given in the URL.

Also as an added level of security, one of the parameters is a time stamp. For the first URL, this is the time stamp taken just before we redirect to Commerce Manager and for the second URL, this is the time stamp set by Commerce Manager before it redirects back to PaperCut. As part of verification for the initial request, the time stamp is checked by Commerce Manager to be within 5 minutes of it arriving. And as part of verification for the return redirection, the time stamp is checked by PaperCut to see if it is within the time window specified by the configuration parameter of `nelnet.timeout-window-secs` which has a default value of 300 seconds (5 minutes).

6 Go-Live

If a group restriction was enabled in Stage 3 it can now be removed or altered to allow access to end-users.

In order to go live, you need to move from the User Acceptance Testing environment (UAT) and into the production environment (PROD). To do this requires the following steps:

In the Commerce Manager:

1. Import the configuration from the UAT and into the PROD.
2. Set up the new PROD shared secret **Key**.
3. Add the PaperCut gateway **Redirect URL** to the "Allow Redirects" list in the PROD.

In the PaperCut payment gateway properties file:

4. Update the **Nelnet Commerce Manager URL** to be the PROD version.
5. Update the shared secret **Key** to be a more secure version that matches what was chosen for the PROD.

Your system is now live and will accept and charge credit cards. We recommend testing the live system with a real credit card to ensure it is functioning correctly. You may be able to void/refund the transaction from Commerce Manager afterwards.

7 Troubleshooting

Administrators may find information in the following log files useful when trying to troubleshoot setup/configuration problems or issues reported by end-users.

Payment Gateway Event Log:

[app-path]\server\logs\payment-gateway\event.log

This log contains gateway specific error messages and events.

Application Log:

[app-path]\server\logs\server.log

This log contains general application specific error messages and events.




Transaction Log:

[app-path]\server\logs\payment-gateway\transaction.log

This log contains a list of successful transactions in a tab-delimited form.

In particular, it may be possible that after the user has confirmed their payment on the Nelnet site, that due to some failure, (s)he is not redirected back to the PaperCut payment gateway page and therefore, the amount has been deducted from the credit card but not been added to the PaperCut balance. To reconcile these differences one would compare the gateway transaction log (specified above) with Nelnet's Commerce Manager payment reports. To look at the details of the Nelnet transactions click on the **Overall** link (as shown in the figure 2 below).

Report Summary

 MS Excel 97-2003  Print  Start Over

Report Criteria

Calendar Day: 07/01/2011 00:00:00 - 08/01/2011 00:00:00

Result Status:

- Valid
- Invalid

Transaction Types:

- Payment
- Refund

Payments Made By:

- Commerce Manager CSR
- Commerce Manager Payer
- NBS Connected partners CSR

Primary Users:

- Commerce Manager Payer

Processors:

- PaperCut Processor - Dummy

Summary







 PaperCut Processor	Valid		Invalid		Total	
 AMERICAN EXPRESS	17	\$110.00	6	\$61.06	23	\$171.06
 DISCOVER	0	\$0.00	0	\$0.00	0	\$0.00
 MASTERCARD	2	\$25.50	0	\$0.00	2	\$25.50
 VISA	4	\$151.50	1	\$300.11	5	\$451.61
Subtotal	23	\$287.00	7	\$361.17	30	\$648.17
 Overall	23	\$287.00	7	\$361.17	30	\$648.17




Figure 3 - Transaction Report Summary - click on "Overall" for details

Report Results

NOTE: Invalid transactions are identified by the "Invalid Transaction" icon next to the confirmation number.

 Print  Start Over  Back to Summary

Download Options

-  MS Excel 97-2003 - Download a list of the transactions displayed on the current report page.
-  Get All (basic - MS Excel 97-2003) - Download a tab-delimited file with basic transaction info.
-  Get All (detailed - MS Excel 97-2003) - Download a tab-delimited file with detailed transaction info.






Overall Results							
Detail	Confirm Number	Date (CST)	Amount (\$)	Payment Method	Account Number	Account	Actual Payer
	1615	07/04/11 1:54 AM	0.50	MASTERCARD		Sandbox test site for PaperCut	Commerce Manager Payer
	1619	07/04/11 1:58 AM	25.00	MASTERCARD	1234	Sandbox test site for PaperCut	Commerce Manager Payer
	1641	07/07/11 3:13 AM	121.50	VISA		Sandbox test site for PaperCut	Commerce Manager Payer
	 1643	07/07/11 3:17 AM	300.11	VISA		Sandbox test site for PaperCut	Commerce Manager Payer
	1647	07/07/11 3:37 AM	10.00	AMERICAN EXPRESS	tim1310026816352	Sandbox test site for PaperCut	Commerce Manager Payer
	1649	07/07/11 4:14 AM	16.00	AMERICAN EXPRESS	tim1310026816353	Sandbox test site for PaperCut	Commerce Manager Payer
	1669	07/07/11 8:58 PM	5.00	AMERICAN EXPRESS	tim1310031576280	Sandbox test site for PaperCut	Commerce Manager Payer
	1671	07/08/11 3:18 AM	5.00	AMERICAN EXPRESS	tim1310112953323	Sandbox test site for PaperCut	Commerce Manager Payer
	1673	07/08/11 4:00 AM	10.00	AMERICAN EXPRESS	tim1310115416268	Sandbox test site for PaperCut	Commerce Manager Payer
	1675	07/08/11 4:13 AM	2.00	AMERICAN EXPRESS	tim1310115416269	Sandbox test site for PaperCut	Commerce Manager Payer
	1677	07/08/11 4:34 AM	5.00	AMERICAN EXPRESS	tim1310117591427	Sandbox test site for PaperCut	Commerce Manager Payer
	1679	07/08/11 4:37 AM	5.00	AMERICAN EXPRESS	tim1310117591428	Sandbox test site for PaperCut	Commerce Manager Payer
		07/08/11		AMERICAN		Sandbox test	Commerce

Figure 4 - Report drill down after clicking on "Overall" link.

This will take the user to the Report Results and from there one can download the report in CSV form if desired. Nelnet recommends doing this reconciliation at least once a week to ensure that there is no disconnect with the payments.

Please feel free to contact the PaperCut Software Development Team at support@papercut.com if you require further assistance.